

Form INV-2 EMISSION POINT DESCRIPTION

Duplicate this form for EACH
Emission POINT

1) Company/Facility Name	Grain Elevator Inc			1a) Form INV-2 Page		of	
2) Emission Point Number	EP-9						
3) Emission Point Description	Receiving Pit #2 Emissions						
4) Is this stack/vent used as an Emergency Bypass Stack?	No	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>			
If YES, for which stack(s)? List Emission Point Nos.:							
EMISSION POINT INFORMATION							
5) Emission Point Type							
Stack/Vent	<input type="checkbox"/>						
Fugitive (specify)	<input checked="" type="checkbox"/>						
Other (specify)	<input type="checkbox"/>						
6) Stack Shape and Dimensions: (interior dimensions at exit point)							
Circular Diameter:	<input type="checkbox"/>		inches				
Rectangular Dimensions:	<input type="checkbox"/>		inches	X		inches	
Other Dimensions	<input type="checkbox"/>		inches				
7) Stack Height Above Ground		feet					
8) Does the Emission Point have a rain cap (or anything else) which obstructs the flow of gases leaving the Emission Point, or a horizontal discharge?							
No	<input type="checkbox"/>	YES (specify):	<input type="checkbox"/>				
9) COMPOSITION OF EXHAUST STREAM							
Exhaust Stream Characteristics	Emission Point Composition of Exhaust Stream			Units of Measure			
a) Flow Rate				<input type="checkbox"/> ACFM <input type="checkbox"/> SCFM			
b) Temperature				Degree Fahrenheit			
10) BYPASS STACKS							
Bypass Stack – Emission Point No.		Bypass Stack Description					
Bypass Stack – Emission Point No.		Bypass Stack Description					
11) LIST OF EMISSION UNITS VENTING THROUGH THIS EMISSION POINT							
Emission Unit No.	Emission Unit No		Emission Unit No.		Emission Unit No.		
EU-9							

Duplicate this form as needed

TYPE ALL INFORMATION

(DNR Form 542-4004. November 1, 2006)

Form INV-3 EMISSION UNIT DESCRIPTION – POTENTIAL EMISSIONS

Duplicate this form for EACH
Emission UNIT

1)	Company/Facility Name	Grain Elevator Inc				1a)	Form INV-3	Page		of									
2)	Emission Point Number	EP-9																	
EMISSION UNIT (PROCESS) IDENTIFICATION & DESCRIPTION																			
3)	Emission Unit Number	EU-9																	
4)	SCC Number	30200553																	
5)	Description of Process	Receiving Grain From Railcars																	
6)	Date of Construction	3-1-57		7)	Date of Installation	3-1-57		8)	Date of Modification										
9)	Raw Material – OR Fuels Used List worst case for EACH pollutant	Corn																	
10)	Federally Enforceable Limit	50 tons PM ₁₀ /yr for the entire facility																	
11)	Permit or Rule Establishing Limit	08-A-000																	
12)	Maximum Hourly Design Rate	700				Tons				Per Hour									
13)	AIR POLLUTION CONTROL EQUIPMENT (CE)																		
	Control Equipment Number	CE-9																	
	Control Equipment Description	Oil Application																	
	Control Equipment Number																		
	Control Equipment Description																		
POTENTIAL EMISSIONS																			
14	Air Pollutant	15	Emission Factor	16	Emission Factor Units	17	Source of E.F.	18	Ash or Sulfur %	19	Potential Hourly Uncontrolled Emissions (Lbs/Hr)	20	Combined Control Efficiency	21	Transfer Efficiency	22	Potential Hourly Controlled Emissions (Lbs/Hr)	23	Potential Annual Emissions (Tons/Yr)
	PM-2.5	.0013	Lbs/ton	AP-42		.91	40			.55	.20								
	PM-10	.0078	Lbs/ton	AP-42		5.46	40			3.28	1.17								
	SO ₂																		
	NOx																		
	VOC																		
	CO																		
	Lead																		
	Ammonia																		
POTENTIAL EMISSIONS - HAPs and additional regulated air pollutants – list the pollutant name in Column 14																			

*Sources of Emission Factors: CEM .. Stack Test .. Mass Balance .. AP-42 .. WebFIRE.. TANKS.. EPA-L&E .. Worksheet .. Other – Specify

Duplicate this form as needed

TYPE ALL INFORMATION

(DNR Form 542-4001. November 1, 2006)

V

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Form INV-4 EMISSION UNIT DESCRIPTION – ACTUAL EMISSIONS

Duplicate this form for EACH
Emission UNIT

1) Company/Facility Name	Grain Elevator Inc			1a) Form INV-4 Page		of	
2) Emission Year	20--	3) Emission Point Number	EP-9				
EMISSION UNIT – ACTUAL OPERATIONS AND EMISSIONS							
4) Emission Unit Number	EU-9			5) SCC Number	30200553		
6) Description of Process	Receiving Grain From Railcars						
ACTUAL THROUGHPUT							
7) Raw Material	Corn						
8) Actual Throughput – Yearly Total	150,000	9)	Units Raw Material	Tons			
Actual Operating Rate/Schedule							
	10) Percent of Total Operating Time	11) Hours/Day	12) Days/Week	13) Weeks/Quarter			
JAN – MAR	25	8	5	13			
APR – JUN	15	8	5	10			
JUL – SEP	25	8	5	13			
OCT – DEC	35	8	5	13			
14) AIR POLLUTION CONTROL EQUIPMENT (CE)							
Control Equipment Number	CE-9						
Control Equipment Description	Oil Application						
Control Equipment Number							
Control Equipment Description							
ACTUAL EMISSIONS							
15 Air Pollutant	16 Emission Factor	17 Emission Factor Units	18 Source of E.F.	19 Ash or Sulfur %	20 Combined Control Efficiency	21 Transfer Efficiency	22 Actual Emissions (Tons/Yr)
PM-2.5	.0013	Lbs/ton	AP-42		40		.06
PM-10	.0078	Lbs/ton	AP-42		40		.35
SO ₂							
NOX							
VOC							
CO							
Lead							
Ammonia							
ACTUAL EMISSIONS - HAPs and additional regulated air pollutants – list the pollutant name in Column 15							

*Sources of Emission Factors: CEM .. Stack Test .. Mass Balance .. AP-42 .. WebFIRE.. TANKS.. EPA-L&E .. Worksheet .. Other – Specify

Duplicate this form as needed

TYPE ALL INFORMATION

(DNR Form 542-4002 November 1, 2006)

V

V

Form INV-5 CALCULATIONS

Duplicate this form for each Form it will
accompany in the Questionnaire

1) Company/Facility Name	Grain Elevator Inc			1a) Form INV-5	Page		of	
2) Emission Point No.	EP-9	3)	Emission Unit No.	EU-9				
4) Calculations are provided in support of information reported on Form INV -		3	<input checked="" type="checkbox"/>	4	<input type="checkbox"/>	for the Emission Point and Emission Unit listed above.		
5) Emissions Calculations								

This methodology should be followed for all grain receiving from rail cars at grain elevators:

Maximum hourly design rate of grain receiving from rail cars = 700 tons/hr

PM_{2.5} emission factor for grain receiving from rail cars per AP-42, Table 9.9.1-1 = .0013 lbs/ton (uncontrolled factor)

PM₁₀ emission factor for grain receiving from rail cars per AP-42, Table 9.9.1-1 = .0078 lbs/ton (uncontrolled factor)

Potential hourly uncontrolled emissions:

PM_{2.5} = 700 tons/hr x .0013 lbs/ton = .91 lbs/hr

PM₁₀ = 700 tons/hr x .0078 lbs/ton = 5.46 lbs/hr

Oil is applied to the grain in the receiving pit, therefore a combined control efficiency (40%) has been applied to calculate hourly controlled emissions.

Potential hourly controlled emissions:

PM_{2.5} = 700 tons/hr x .0013 lbs/ton x (1-.40) = .55 lbs/hr

PM₁₀ = 700 tons/hr x .0078 lbs/ton x (1-.40) = 3.28 lbs/hr

Potential annual emissions:

To calculate PM_{2.5} and PM₁₀ potential annual emissions multiply the highest actual grain throughput from the last five years by 1.2. Multiply the adjusted actual throughput by the emission factor, then by the combined control efficiency and divide by 2,000.

Highest actual throughput in the last five years = 416,667 tons/yr

416,667 tons/yr x 1.2 = 500,000 tons/yr

PM_{2.5} = 500,000 tons/yr x .0013 lbs/ton x (1-.40) x 1 ton/2,000 lbs = .20 tons/yr

PM₁₀ = 500,000 tons/yr x .0078 lbs/ton x (1-.40) x 1 ton/2,000 lbs = 1.17 tons/yr

Form INV-5 CALCULATIONS

Duplicate this form for each Form it will
accompany in the Questionnaire

1) Company/Facility Name	Grain Elevator Inc			1a) Form INV-5	Page		of	
2) Emission Point No.	EP-9	3)	Emission Unit No.	EU-9				
4) Calculations are provided in support of information reported on Form INV -	3 <input type="checkbox"/>	4 <input checked="" type="checkbox"/>	for the Emission Point and Emission Unit listed above.					
5) Emissions Calculations								

This methodology should be followed for all grain receiving from rail cars at grain elevators:

Actual emissions from all processes at Group 2 Grain Elevators should be calculated using actual throughput data from the applicable emission year.

Oil is applied to the grain in the receiving pit, therefore a combined control efficiency (40%) has been applied to calculate actual emissions.

Actual emissions:

To calculate actual emissions, multiply the actual grain throughput by the appropriate emission factor, then by the combined control efficiency and divide by 2,000.

$$PM_{2.5} = 150,000 \text{ tons} \times .0013 \text{ lbs/ton} \times (1-.40) \times 1 \text{ ton}/2,000 \text{ lbs} = .06 \text{ tons}$$

$$PM_{10} = 150,000 \text{ tons} \times .0078 \text{ lbs/ton} \times (1-.40) \times 1 \text{ ton}/2,000 \text{ lbs} = .35 \text{ tons}$$